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cont.

Claim 22. The substrate of claim 19 wherein the substrate comprises a material selected from the groups consisting of ceramic and organic.

Claim 23. The substrate of claim 19 wherein the die-down die is an integrated circuit.

Claim 24. The substrate of claim 19 wherein the die-down die includes components attached to the die-down die.

Claim 25. A process for re-orienting a die-down die to a die-up orientation, the die-down die defining electrical contacts, the process comprising the steps of:

① forming a plurality of electrically conductive leads defining first and second contacts on a substrate,

② arranging the first contacts to accept electrical connections from the electrical contacts of a die-down die, and

③ arranging the second contacts to correspond to the die-up orientation.

Claim 26. The process of claim 25 further comprising the steps of:

joining electrically conductive wires from the electrical contacts of the die-down die to the first contacts on the substrate,

arranging a package to receive a die-up die, the package defining third contacts arranged for receiving electrical connections to a die-up die,

joining electrically conductive wires from the second contacts on the substrate to the third contacts.

Claim 27. The process of claim 26 further comprising the steps of:

providing a lead frame within the package,

forming third contacts as part of the lead frame, and

forming fourth contacts as part of the lead frame, and

arranging the fourth contacts to make electrical connections to a printed circuit board.

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Claim 28. The process of claim 26 further comprising the step of attaching the substrate to the die-down die.

Claim 29. The process of claim 26 further comprising the step of forming the substrate from a material selected from the groups consisting of ceramic and organic

Claim 30. The process of claim 26 wherein the die-down die is an integrated circuit.

Claim 31. The process of claim 26 wherein the die-down die includes components attached to the die-down die.

Claim 32. A die attach package for re-orienting and connecting a die-down die in a die-up orientation, the die attach package comprising:

substrate having plurality of electrically conductive leads defining first contacts, the first contacts arranged to accept electrical connections from the electrical contacts of ^{the} die-down die, and wherein the electrical leads ^{also} define second contacts, the second contacts arranged to correspond to the die-up orientation,

wherein the die attach package defining third contact leads with a die-up orientation, and electrical connections from the third contact to the second contacts.

Claim 33. The die attach package of claim 32 wherein the package includes a lead frame wherein the third contacts are formed as part of that lead frame, and wherein the lead frame defines fourth contacts, wherein the fourth contacts are arranged to make electrical connections to a printed circuit board.

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Claim 34. The die attach package of claim 32 further comprising non-conductive means for attaching the substrate to the die-down die.

Claim 35. The die attach package of claim 32 wherein the substrate comprises a material selected from the groups consisting of ceramic and organic.

Claim 36. The die attach package of claim 32 wherein the die-down die is an integrated circuit.

Claim 37. The die attach package of claim 32 wherein the die-down die includes components attached to the die-down die.

Claim 38. A process for re-orienting and connecting a die-down die in a die-up orientation and package, the die attach package defining third contact leads with a die-up orientation, the die-down die defining electrical contacts, the process comprising the steps of:

forming a plurality of electrically conductive leads defining first and second contacts on a substrate,

arranging the first contacts to accept electrical connections from the electrical contacts of a die-down die,

making electrical connections from the die-down die contact to the first contacts.

arranging the second contacts to correspond to the die-up orientation,

making electrical connections from the third contact to the second contacts.

Claim 39. The process of claim 38 wherein the making of the electrical connections comprising the steps of:

joining electrically conductive wires from the electrical contacts of the die-down die to the first contacts on the substrate,

joining electrically conductive wires from the second contacts on the substrate to the third contacts.

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Claim 40. The process of claim 38 further comprising the steps of:
providing a lead frame within the package,
forming third contacts as part of the lead frame, and
forming fourth contacts as part of the lead frame, and
arranging the fourth contacts to make electrical connections to a printed circuit board.

Claim 41. The process of claim 38 further comprising the step of non-conductively attaching the substrate to the die-down die.

Claim 42. The process of claim 38 further comprising the step of forming the substrate from a material selected from the groups consisting of ceramic and organic

Claim 43. The process of claim 38 wherein the die-down die is an integrated circuit.

Claim 44. The process of claim 38 wherein the die-down die includes components attached to the die-down die

REMARKS

Claims 18-24 are apparatus claims drawn to the substrate where the re-orientation of the contacts are made, and claims 25 - 31 are process claims that mirror these apparatus claims. Claims 32 - 37 are claims drawn to the package that contains the substrate and makes connections to the outside world, typically a printed circuit board. Claims 38 - 44 are process claims that mirror these apparatus claims.

No new matter is added.

It is believed that the claim wording is simpler than that in the deleted claims, and so the claims should be more easily searched and the most relevant prior art retrieved for review by the Examiner.